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LISTING OF CLAIMS:

This listing of claims will replace all prior versions of claims in the application:

- 1 1. (Original) A magnetoresistive sensor comprising:
2 first and second magnetically free layers;
3 a magnetically pinned layer sandwiched between the first and second free layers,
4 said magnetically pinned layer being self pinned;
5 a first electrically insulating barrier layer sandwiched between said first
6 magnetically free layer and said pinned layer; and
7 a second electrically insulating barrier layer sandwiched between said second free
8 layer and said pinned layer.
- 1 2. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer
2 is pinned by a combination of magnetostriction of the pinned layer and compressive stress
3 within the sensor.
- 1 3. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer
2 comprises Co and Fe, wherein the atomic percent of Fe is about 50%.
- 1 4. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer
2 comprises CoFe with an atomic percent of Fe ranging from 20 to 60 percent.

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1 5. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer
2 comprises CoFeV, with an atomic percent of Fe ranging from 20 to 60 percent and an
3 atomic percent of V ranging from 2 to 10 percent.

1 6. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer
2 comprises a single ferromagnetic layer comprising Co and Fe.

1 7. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer
2 comprises a single ferromagnetic layer comprising Co, Fe and V.

1 8. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer
2 comprises three ferromagnetic layers separated by first and second non-magnetic coupling
3 layers.

1 9. (Original) A magnetoresistive sensor as in claim 8, wherein said three
2 ferromagnetic layers comprise Co and Fe and wherein the atomic percent of Fe in each
3 layer is 20 to 60 percent.

1 10. (Original) A magnetoresistive sensor as in claim 8, wherein said three
2 ferromagnetic layers comprise Co, Fe and V and wherein the percentage of Fe in each
3 layer ranges from 20 to 60 percent and wherein the atomic percentage of V ranges from 2
4 to 10 percent.

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1 11. (Original) A magnetoresistive sensor as in claim 1, wherein said pinned layer
2 comprises first two outer ferromagnetic layers and one inner ferromagnetic layers, the
3 outer and inner ferromagnetic layers comprising Co and Fe, said outer ferromagnetic
4 layers having a thickness of about 5 angstroms and said inner ferromagnetic layer having
5 a thickness of about 10 angstroms.

1 12. (Original) A magnetoresistive sensor as in claim 1, wherein said pinned layer
2 comprises a single layer of ferromagnetic material comprising Co and Fe and
3 wherein said single ferromagnetic layer has a thickness of 5 to 15 angstroms.

1 13. (Original) A magnetoresistive sensor as in claim 1, wherein said barrier layers
2 comprise Aluminum Oxide.

1 14. (Original) A magnetoresistive sensor as in claim 1, wherein said barrier layers
2 comprise magnesium oxide.

1 15. (Original) A magnetoresistive sensor as in claim 1, wherein at least one of
2 said free layers comprises CoFe.

1 16. (Original) A magnetoresistive sensor as in claim 1, wherein at least one of
2 said free layers comprises a layer of CoFe and a layer of NiFe, the CoFe layer
3 being disposed closer to the pinned layer than the NiFe layer.

1 17. (Original) A magnetoresistive sensor as in claim 11, wherein said three
2 ferromagnetic layer of said pinned layer are separated from one another by first and
3 second non-magnetic coupling layers.

1 18. (Original) A magnetoresistive sensor as in claim 11, wherein said three
2 ferromagnetic layers of said pinned layers are separated from one another by first
3 and second non-magnetic coupling layers comprising Ru.

19. (Withdrawn) A magnetic data storage system, comprising:
a motor;
a magnetic disk rotatably connected with said motor;
a suspension;
a slider connected with said suspension for movement adjacent to said disk;
a magnetoresistive sensor, connected with said suspension, said
magnetoresistive sensor further comprising:
first and second magnetically free layers;
a magnetically pinned layer sandwiched between the first and second free
layers, said magnetically pinned layer being self pinned;
a first electrically insulating barrier layer sandwiched between said first
magnetically free layer and said pinned layer; and
a second electrically insulating barrier layer sandwiched between said second free layer
and said pinned layer.